Exhibit G

December 15, 1954

Mr. M. G. Quayle — Chicago

Dr. George E. Ziegler — Evanston

COPY

Dear Mel:

Will you please give your best attention to the attached copy of a memorandum which I asked Mr. Morrell to prepare as a summary of important points in connection with acoustical plastic bond failures. This is not intended as a complete report on the subject. We merely want your advice as to the next steps we should take in order to secure good control over the bentonite as used by our various plants. Also, you may want to give some thought to introduce some of the cautions in your forthcoming acoustical plastic literature.

Dave and I would like to come down and discuss this matter with you at your convenience.

Very truly yours,

George E. Ziegler

GEZ:bg
cc:Morrell
Myers
encl.

December 14, 1954

Mr. [redacted] E. Ziegler Evanston

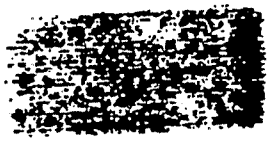
David L. Morrell Evanston

Acoustical Plastic Bond Failures

As the result of the many tests on bentonites which have been performed to date, I feel it is time to make some recommendations to our producers of Zonolite Acoustical Plastic. It seems at this juncture that bentonite is a real cause of the drop-off problems. A better term for drop-off is bond failure, since that is actually what occurs when a failure takes place. A chemical reaction apparently causes the bond strength of the bentonite to decrease to a severe degree. This reaction seems to be one of calcium ions and some factor in the clay. There are a number of sources of these ions. The use of a gypsum contaminated mixer is a source of considerable import. Well or city water of great hardness is a very important source. Dirty tools may also contribute. The fully dried surface of the gypsum base coat itself is a probable location of soluble ions.

Two tests are performed to determine the type of bentonite and to classify it as safe or unsafe. The first is a water hardness test using the Taylor hardness kit. The sample is prepared by mixing a ten gram sample of the clay in 100 cc. of 3% benzyl trimethyl ammonium chloride in distilled water ("BTA" available from Commercial Solvents Company). This is done for three minutes in a Waring Blendor. The BTA is used to disperse the clay and prevent a gel from forming. The mixture is then filtered and 2 cc.of the filtrate are diluted in approximately 48 cc. of distilled water. The standard Taylor test is then performed. The other test is one of viscosity in which the Stormer Viscosimeter is used for performing a 600 rpm. viscosity test. The clay is mixed again in the Waring Blendor, 10 gm. of bentonite in [redacted] of distilled water.

The range of hardness involved is from 1.5 to 4.8 or more. These numbers represent the number of cubic centimeters of reagent required to complete the titration in the Taylor test. Medium hard water runs about 6 hardness units. Viscosities range from about 15 centipoises to about 80 cp. In collecting a large number of samples of clays used by the various plants and samples of clays used on jobs where bond failures have occurred, some very reasonable conclusions can be drawn.



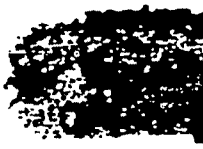
All the clays from failure jobs have been definitel in a class of high hardness and low viscosity. Fro tests, a practical limit of hardness would be 2.7. corresponds to 27 milliequivalents of $CaCl_2$ or $CaSO$ 100 gm of clay. The reason for setting a limit is We cannot control water hardness on a job, nor can control the ionic surface of the gypsum basecoat. must have a clay with calcium ion "tolerance". Cla of low hardness have this tolerance. Further, in o to classify the clay, a minimum viscosity of 20 cp. must be specified. Viscosity as yet has shown no e on the bond strength when used in acoustical plasti It is merely a means of classification.

Past experiences indicate that the application of a plastic over a dry base coat should be avoided. It definitely never be applied over plaster that has b subject to "dry-out". Unset gypsum is very ionic.

The above facts gain further support when one consi areas in which failures have occurred. Licensees u bentonites from many different sources. Apparently of these sources are supplying bentonites which do meet the above requirements. Perhaps it would be wo to concentrate bentonite sources to a few companies who are able to consistently deliver within the spe limits. This would be expedited by the consolidati of producers to a few centrally located plants.

The following recommendations can be made:

1. Use only Wyoming bentonites of the 200 mesh gradation without any additives such as viscosity boosters. [redacted]enders, etc.



te must be specified
ardness below 2.7 hardness units
Viscosity above 20 cp.

3. Do not soak acoustical plastic.Use immediately

4. Use a clean mixer and tools.

5. Applying acoustical plastic over dry basecoat avoided. It should never be applied to a base "dry-out" has occurred.

6. Apply the first coat of acoustical plastic to specified thickness of 3/8" or thicker.

[redacted]

The above recommendations will necessitate a revision of the V.I. "Standard Specifications for Vermiculite Acoustical Plastic".

Very truly yours,

David L. Morrell

DLM:bg
cc:Perrine
Hayes

[redacted]

[redacted]